

Date: Wednesday, 6/6/2007 1:48:29 PM
User: Kim Johnston

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : 02.750 SUPPORT
Job Number : 32779
Estimate Number : 10829
P.O. Number : *NIA* Part Number : D28931
This Issue : 6/6/2007 S.O. No. : *NIA* Drawing Number : D2893 REV B
Prsht Rev. : NC Project Number : N/A
First Issue : *NIA* Type : MACHINED PARTS Drawing Revision : B
Previous Run : 29524 Material : *NIA*
Due Date : 6/30/2007 Qty: 20 Um: Each
Written By : *[Signature]*
Checked & Approved By : *[Signature]* 07.06.07
Comment : Est: C 02.11.26 Reformat; Added P/O KJ
est D 06.04.19 removed alodine EC
Est Rev:E Added priming as per Rev B 07-04-30 JLM

Additional Product

Job Number:



Seq. #: Machine Or Operation: Description:

1.0

PG

PURCHASING



Comment: PURCHASING

Issue P/O: *3934**CLO 7106108 (20)*

Description: D6104-005

Material: 17-4 PH SS (AMS 5643 OR AISI 630) as per Dwg D6104

Material release note required.

2.0

D6104005

17-4 SS Roundbar 4.00"OD

Comment: Qty.: 1.0000 Each(s)/Unit Total: 20.0000 Each(s)
Support

3.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Recieve & Inspect for Transit Damage

Ensure Material Release Note is attached

4.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

Turn blank for Haas as per Folio FA081

turn per drawing DSK078

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Wednesday, 6/6/2007 1:48:29 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 02.750 SUPPORT

Job Number: 32779

Part Number: D28931

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

QC5

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

5 07/08/15 20

6.0

HAAS1

HAAS CNC VERTICAL MACHINING #1



Comment: BAND SAW

Machine as per Folio FA081

Tumble & Deburr

JL/9ml/BG 07-08-21 (20)

7.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT ALL DIM TO DIM SHEET

JL/9ml/BG 07-08-21 (20)

8.0

QC8

SECOND CHECK



Comment: SECOND CHECK

J.F. 07/08/21 (20)

9.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3

Mask Inside Bore for Priming

M105068

M.K. 07/08/29 (20)

10.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

Prime inside surface as per Dwg D2893 and QSI 005 4.3.

M 07 09 01

11.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT

IT 07-09-04 (20)

12.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: Outside Paint Booth

IT 07-09-04 (20)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☐ No ☒ DQA: D Date: 9/18/04
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Wednesday, 6/6/2007 1:48:29 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 02.750 SUPPORT

Job Number: 32779

Part Number: D28931

Job Number:



Seq. #:

Machine Or Operation:

Description :

13.0

QC21

FINAL INSPECTION/W/O RELEASE



(25)

Comment: FINAL INSPECTION/W/O RELEASE

207/09/04

Job Completion



U D 07/04

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order: 32779
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. B	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev B / DSK078 Rev A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	By	Date
Lathe Section									
A	2.707	2.712							
B	4.946	4.966							
C	3.064	3.084							
D	0.718	0.738							
E	0.090	0.110							
F	2.934	2.954							
G	2.166	2.186							
H	3.890	3.910							
I	0.914	0.934							
J	0.022	0.042							
K	0.109	0.129							
L									
HAAS Section									
AA	2.985	3.005		2.993	2.990	2.990	2.992		
AB	0.440	0.460		.440	.440	.440	.440		
AC	0.125	0.160		.135	.136	.135	.136		
AD	0.040	0.060		.042	.047	.043	.041		
AE	0.188	0.193		.190	.190	.190	.190		
AF	0.125	0.160		.141	.140	.141	.142		
AG	0.140	0.160		.157	.157	.155	.153		
AH	1.360	1.400		1.377	1.371	1.373	1.370		
AI	0.040	0.060		.049	.051	.048	.047		
AJ	1.190	1.230		1.220	1.217	1.222	1.213		
AK	0.010	0.020		.015	.015	.015	.015		
AL	0.053	0.073		.063	.063	.063	.063		
AM	0.240	0.260		.250	.250	.250	.250		
AN	2.518	2.538		2.525	2.523	2.524	2.525		
AO	84.39	90.39		/	/	/	/		
AP	0.261	0.266		.262	.262	.262	.262		
AQ	0.053	0.073		.063	.063	.063	.063		
AR									
AS									
Accept/Reject									

Measured by:	SL
Date:	07/08/15

Audited by:	
Date:	

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	
B	07.05.08	Dimension AP revised	KJ/JLM	

DART AEROSPACE LTD	Work Order: 32779
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. B	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev B / DSK078 Rev A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	By	Date
Lathe Section									
A	2.707	2.712							
B	4.946	4.966							
C	3.064	3.084							
D	0.718	0.738							
E	0.090	0.110							
F	2.934	2.954							
G	2.166	2.186							
H	3.890	3.910							
I	0.914	0.934							
J	0.022	0.042							
K	0.109	0.129							
L									
HAAS Section									
AA	2.985	3.005		2.990	2.988	2.992	2.993		
AB	0.440	0.460		.440	.440	.440	.440		
AC	0.125	0.160		.135	.140	.140	.136		
AD	0.040	0.060		.042	.042	.042	.041		
AE	0.188	0.193		.190	.190	.190	.190		
AF	0.125	0.160		.140	.140	.138	.141		
AG	0.140	0.160		.151	.150	.149	.148		
AH	1.360	1.400		1.372	1.368	1.369	1.369		
AI	0.040	0.060		.048	.052	.049	.049		
AJ	1.190	1.230		1.214	1.215	1.213	1.212		
AK	0.010	0.020		.015	.015	.015	.015		
AL	0.053	0.073		.063	.063	.063	.063		
AM	0.240	0.260		.250	.250	.250	.250		
AN	2.518	2.538		2.520	2.520	2.520	2.525		
AO	84.39	90.39		/	/	/	/		
AP	0.261	0.266		.262	.262	.262	.262		
AQ	0.053	0.073		.063	.063	.063	.063		
AR									
AS									
Accept/Reject									

Measured by:	J.L. SA
Date:	07.10.16

Audited by:	
Date:	

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	
B	07.05.08	Dimension AP revised	KJ/JLM	

DART AEROSPACE LTD	Work Order: 32779
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. B	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev B / DSK078 Rev A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	By	Date
Lathe Section									
A	2.707	2.712							
B	4.946	4.966							
C	3.064	3.084							
D	0.718	0.738							
E	0.090	0.110							
F	2.934	2.954							
G	2.166	2.186							
H	3.890	3.910							
I	0.914	0.934							
J	0.022	0.042							
K	0.109	0.129							
L									
HAAS Section									
AA	2.985	3.005		2.990	2.991	2.994	2.995		
AB	0.440	0.460		.440	.440	.440	.440		
AC	0.125	0.160		.144	.143	.140	.140		
AD	0.040	0.060		.042	.042	.041	.050		
AE	0.188	0.193		.190	.190	.190	.190		
AF	0.125	0.160		.143	.143	.137	.050		
AG	0.140	0.160		.150	.150	.155	.150		
AH	1.360	1.400		1.367	1.368	1.370	1.378		
AI	0.040	0.060		.048	.047	.047	.050		
AJ	1.190	1.230		1.211	1.212	1.213	1.215		
AK	0.010	0.020		.015	.015	.015	.015		
AL	0.053	0.073		.063	.063	.063	.063		
AM	0.240	0.260		.250	.250	.250	.250		
AN	2.518	2.538		2.520	2.520	2.525	2.528		
AO	84.39	90.39							
AP	0.261	0.266		.262	.262	.262	.262		
AQ	0.053	0.073		.063	.063	.063	.063		
AR									
AS									
Accept/Reject									

Measured by: SA RBF
Date: 07.05.18

Audited by:
Date:

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	
B	07.05.08	Dimension AP revised	KJ/JLM	

DART AEROSPACE LTD	Work Order: 32779
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. B	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev B / DSK078 Rev A and record below:

Dim	Min	Max	Go/No Go Gauge	Recorded Actual Dimensions				By	Date
				1	2	3	4		
Lathe Section									
A	2.707	2.712							
B	4.946	4.966							
C	3.064	3.084							
D	0.718	0.738							
E	0.090	0.110							
F	2.934	2.954							
G	2.166	2.186							
H	3.890	3.910							
I	0.914	0.934							
J	0.022	0.042							
K	0.109	0.129							
L									
HAAS Section									
AA	2.985	3.005		2.995	2.993	2.991	2.993		
AB	0.440	0.460		.450	0.440	0.440	0.440		
AC	0.125	0.160		.150	0.140	0.145	0.140		
AD	0.040	0.060		.050	0.050	0.045	0.045		
AE	0.188	0.193		.188	0.188	0.188	0.188		
AF	0.125	0.160		.141	0.140	0.142	0.140		
AG	0.140	0.160		.149	0.145	0.143	0.145		
AH	1.360	1.400		1.386	1.331	1.367	1.373		
AI	0.040	0.060		.050	0.050	0.050	0.053		
AJ	1.190	1.230		1.216	1.213	1.211	1.215		
AK	0.010	0.020		.010	0.010	0.010	0.010		
AL	0.053	0.073		.060	0.063	0.063	0.063		
AM	0.240	0.260		.250	0.250	0.250	0.250		
AN	2.518	2.538		2.528	2.528	2.528	2.528		
AO	84.39	90.39	DT 8699	✓					
AP	0.261	0.266		.261	0.261	0.261	0.261		
AQ	0.053	0.073		.063	0.063	0.063	0.063		
AR									
AS									
Accept/Reject									

Measured by: <i>SG</i>
Date: 07/08/20

Audited by:
Date:

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	
B	07.05.08	Dimension AP revised	KJ/JLM	<i>[Signature]</i>

DART AEROSPACE LTD	Work Order:	32779
Description: Ø2.750 Support	Part Number:	D2893-1
Inspection Dwg: D2893 Rev. B		Page 1 of 1

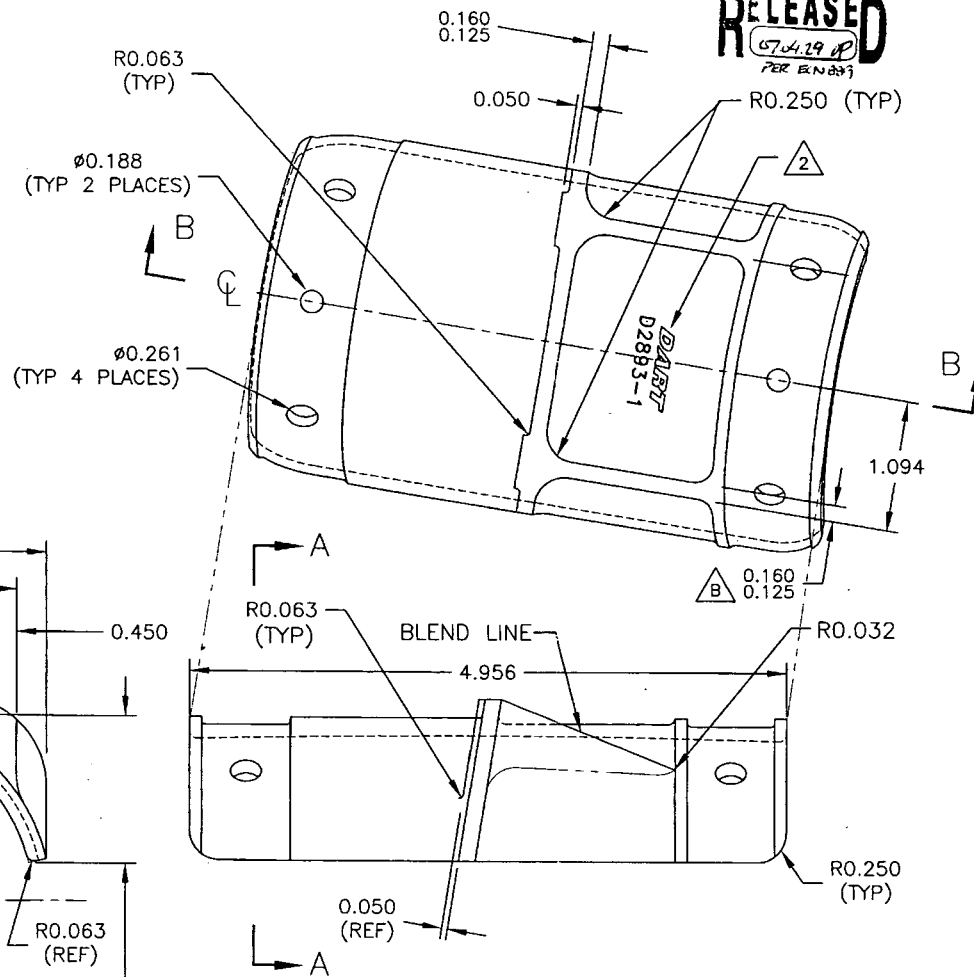
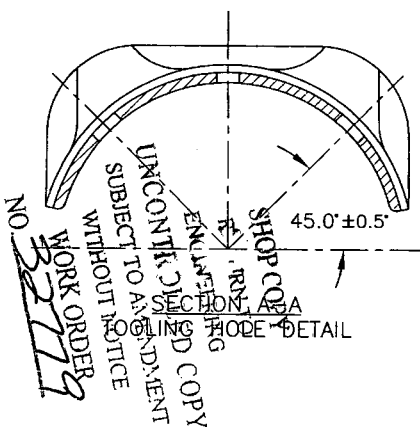
Inspect dimensions highlighted on inspection sheet drawing D2893 Rev B / DSK078 Rev A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	By	Date
Lathe Section									
A	2.707	2.712		2.709	2.709	2.712		Certificate of conformity	
B	4.946	4.966		4.956	4.960	4.955			
C	3.064	3.084		3.075	3.072	3.075			
D	0.718	0.738		0.727	0.727	0.727			
E	0.090	0.110		0.101	0.102	0.100			
F	2.934	2.954		2.944	2.946	2.944			
G	2.166	2.186		2.175	2.177	2.175			
H	3.890	3.910		3.899	3.898	3.906			
I	0.914	0.934		0.926	0.928	0.928			
J	0.022	0.042		0.032	0.032	0.032			
K	0.109	0.129		0.117	0.117	0.116			
L									
HAAS Section									
AA	2.985	3.005		2.990	2.992	2.990	2.997		
AB	0.440	0.460		0.446	0.440	0.440	0.440		
AC	0.125	0.160		0.140	0.135	0.136	0.136		
AD	0.040	0.060		0.045	0.040	0.043	0.043		
AE	0.188	0.193		0.188	0.188	0.188	0.188		
AF	0.125	0.160		0.140	0.142	0.140	0.140		
AG	0.140	0.160		0.145	0.143	0.143	0.143		
AH	1.360	1.400		1.373	1.371	1.371	1.373		
AI	0.040	0.060		0.050	0.054	0.054	0.054		
AJ	1.190	1.230		1.215	1.217	1.217	1.216		
AK	0.010	0.020		0.010	0.010	0.010	0.010		
AL	0.053	0.073		0.063	0.063	0.063	0.063		
AM	0.240	0.260		0.256	0.250	0.250	0.250		
AN	2.518	2.538		2.528	2.528	2.528	2.528		
AO	84.39	90.39							
AP	0.261	0.266		0.261	0.261	0.261	0.261		
AQ	0.053	0.073		0.063	0.063	0.063	0.063		
AR									
AS									
Accept/Reject									

Measured by:	<i>[Signature]</i>
Date:	07.08.21

Audited by:	
Date:	






Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	
B	07.05.08	Dimension AP revised	KJ/JLM	<i>[Signature]</i>



- D2893-1
- 1) MATERIAL: 17-4 PH STAINLESS STEEL
HEAT TREAT TO H900 CONDITION
(900°F FOR 1 HR, AIR COOL)
MIN UTS = 170 KSI (38 HRC)
- PRIME ONLY
- 7 B
- 2) IDENTIFY WITH DART LOGO AND PART NUMBER IN
THIS AREA WITH 0.125 HIGH LETTERING 0.010-0.020 DEEP
- 3) BREAK ALL UNMARKED SHARP EDGES 0.010 TO 0.020
- 4) PART IS SYMMETRIC ABOUT CENTERLINE
- 5) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 6) ALL DIMENSIONS ARE IN INCHES
- 7) FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005 4.3
PRIME INSIDE SURFACE AS SHOWN PER DART QSI 005 4.2

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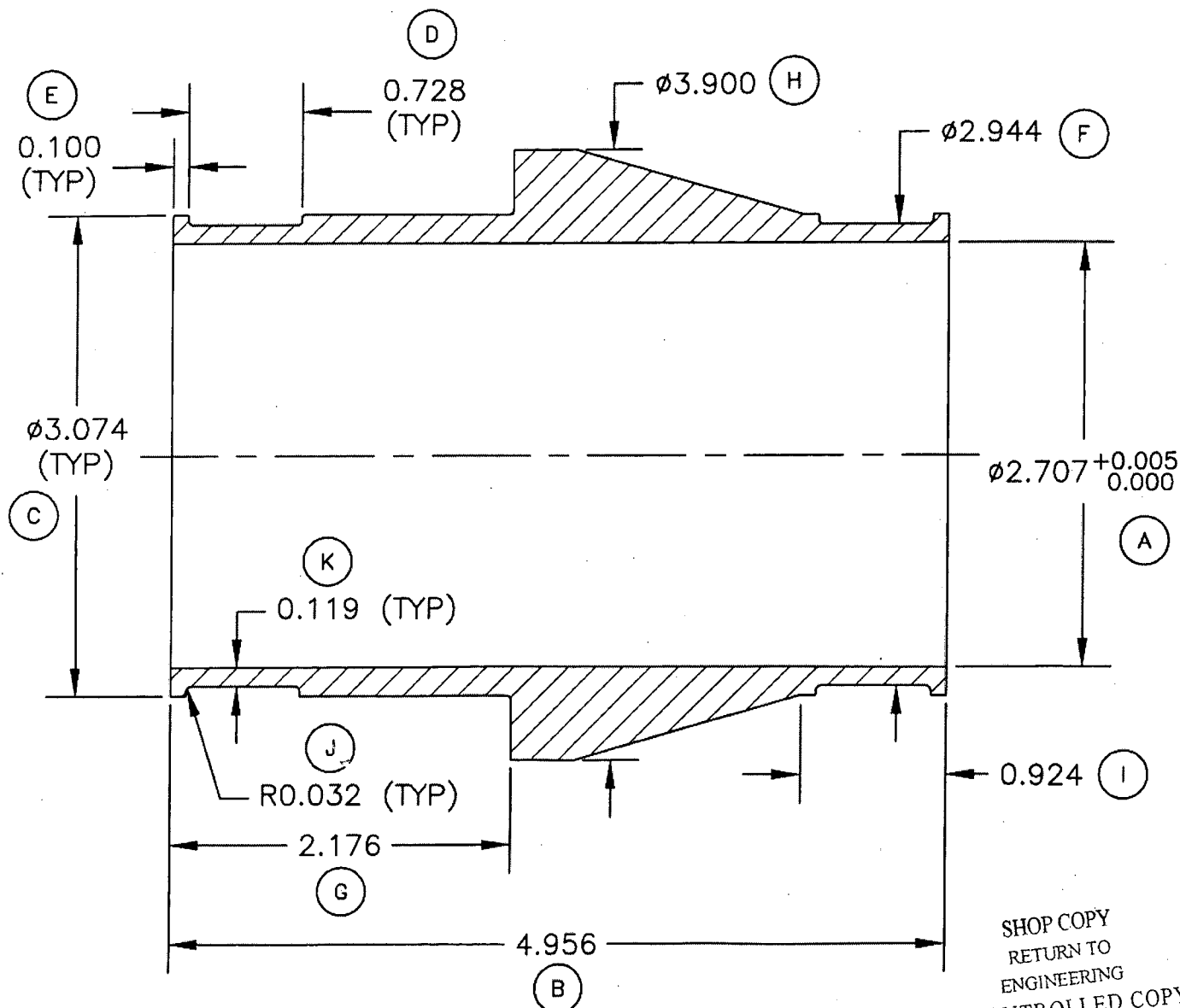
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DART AEROSPACE LTD.

B	07.03.16	UPDATE DIMS AS MFG., PRIME INSIDE	
A	01.01.10	NEW ISSUE	
DESIGN	 DRAWN BY 	 DART AEROSPACE LTD. MARKHAM, ONTARIO, CANADA	
CHECKED	 APPROVED 	DRAWING NO. D2893 REV. 1 OF 1 SHEET 1 OF 1	
DATE	07.03.16	TITLE Ø2.750 SUPPORT	



DESIGN RF	DRAWN BY RF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED H	APPROVED H	DRAWING NO. DSK 078	REV. A SHEET 1 OF 1
DATE 03.05.20		TITLE TURNING DETAIL FOR D2893-1	SCALE 1:1
A	03.05.20	NEW ISSUE	

RELEASED
03.07.01



D2893-1 TURNING DETAIL

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 32779

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T-532 P006/006 F-232
514-695-3281
FROM-metax castle

31	553111	1V#31- 946258 01	DEL NOT BEFORE 06/14/07	DEL NOT AFTER 06/14/07	DEL NOT BEFORE 06/18/07	DEL NOT AFTER 06/18/07	CL-1A RMM EXPEDIE	DATE CHARGE-LOADED 20 JUN 2007	NO. COM.-ORD. NO. 553111	POIDS TOTAL - JOURNEE-TO:			
REQUISITION CLIENT-CUSTOMER REQUISITION NO.			NO. COM. CLIENT-CUST. ORD. NO. P000003934		COMPTES-CT.	VEND.-SLS	TERR.	EXPEDIE PAR-SHIP VIA BEST	DUWT.-GR. NET				
METEUR-PURCHASING AGENT CHANTAL			TELEPHONE 613 632-3336		HC	DOCE	NO. COM. ORD.	REGION LIVRAISON-DEL ZONE C/C	F.A.B.-F.O.B.	BILL	NO. FEVILLE/EMBALLAGE-B/L NUMB		
VRE A-SHIP TO:			VENDU A-SOLD TO: DART AEROSPACE LTD 1275 ABERDEEN HAWKESBURY ON K6A 1K7			INFORMATION CREDIT-CREDIT INFORMATION			ROUTE 01-NL-06. 31-NL-06.				
INSTRUCTIONS/LIVRAISON-DELIVERY ING-F56610			INSTRUCTIONS LIVRAISON (CONT.)-DELIVERY (CONT'D.)			INSTRUCTIONS LIVRAISON (CONT.)-DELIVERY (CONT'D.)							
SCRIPTION - ITEM 1 4.0000 RD 17CR-4N1 CF SOL. TREATED COND A STNLS 5.10" GOLD										QTE/UNITE COM.-ORDERED 20 PCS PCS		POIDS COM.-WT. ORDER 31	
INSTRUCTIONS			INSTRUCTIONS (CONT'D.) TOL + 1/8" - 0 NO PACKAGING REQD PRIOR DIST/ORD: 01 946258			COULEE INFO-HEAT INFO QTE-QTY A18781 ✓			BALLOTS-BUNDLES 1 20		POIDS EXP.-WT. SHIPPED 363		
NBR OF DMTRS: MAIL W/MATL 1									POIDS EST.-GROSS WT. 376 42.730FT		FORME-SHAPE I.A.C. 14996		
CASTLE (CHICAGO)			06/18/07			INSTRUCTIONS (CONT'D.) 20x5.10"			AIRE/CHARGE-LOAD AREA 4		BTL		
SCRIPTION - ITEM 2										QTE/UNITE COM.-ORDERED		POIDS COM.-WT. ORDER	
INSTRUCTIONS			INSTRUCTIONS (CONT'D.) 1 Box			COULEE INFO-HEAT INFO QTE-QTY			BALLOTS-BUNDLES		POIDS EXP.-WT. SHIPPED		
									POIDS EST.-GROSS WT.		FORME-SHAPE I.A.C.		
						INSTRUCTIONS (CONT'D.)			AIRE/CHARGE-LOAD AREA		BTL		
SCRIPTION - ITEM 3										QTE/UNITE COM.-ORDERED		POIDS COM.-WT. ORDER	
INSTRUCTIONS			INSTRUCTIONS (CONT'D.)			COULEE INFO-HEAT INFO QTE-QTY			BALLOTS-BUNDLES		POIDS EXP.-WT. SHIPPED		
									POIDS EST.-GROSS WT.		FORME-SHAPE I.A.C.		
						INSTRUCTIONS (CONT'D.)			AIRE/CHARGE-LOAD AREA		BTL		

ORD.NO 00622313 P.O.#0126746

LOT. 00421853



GLORIA MATERIAL TECHNOLOGY CORP. INSPECTION CERTIFICATE

台南縣新營市新中街35號1樓
TEL: (06)5320000
FAX: (06)5320088

Messrs: ENERGY STEEL PRODUCTS INC.

Order No: 2006003980

Grade: 17-4 PH

P.O.NO.: 91853-000 OP

FILE NO: 2006006726-A

Size: 4.5"

Date: 10/24/2006

HBAT-LOT No: 01745-50

Weight: 4054.0KG 8937.55LB

Pcs: 12

Condition: HF-Solution Annealed-Peeled

Chemical Composition (wt%)

	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Nb+Ta
Min.						3.0	15.0		3.0	0.15
Max.	0.07	1.00	1.00	0.040	0.025	5.0	17.5	0.50	3.0	0.45
Result	0.03	0.36	0.66	0.023	0.001	4.7	15.8	0.08	3.2	0.27

	N	Nb	H	Ta
Min.		0.15		
Max.		0.45	0.0005	
Result	0.0480	0.27	0.0003	0.00029

Mechanical Properties Spec.

	Hardness	Grain Size	δ -Ferrite	H900-Hardness(Ave.)
Condition	1/2R			
Spec.Min.				40HRC
Spec.Max.	363HBN		5%	47HRC
Result	312HBN	7.5	0.3%	41.3HRC

Tensile Test

	Elongation(A)	Tensile Strength(Rm)	Yield Strength(Rp)	Reduction of Area(Z)
Condition				
Min.	10%	190KSI	170KSI	40%
Max.				
Result	15.6%	198KSI	173KSI	53.6%

Heat Treatment Condition

Condition	Temperature	Time/hour	Treatment
SOLUTION	1900°F	4.57	FAST AIR COOL.

Non-Metallic Inclusions: AMS 2303E

	Severity	Frequency
Max.	0.35	0.4
Result	0.08	0.05

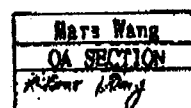
Specification:

1. ASTM A370-05, A484-05a, A564-04, A388-05.
2. AMS 3643Q, 2303E (Mag particle test).
3. ASME SA564(04), SA484(04).
4. EN 10204/3.1.B.
5. ENERGY SPEC, S91. REV.3.

Remark:

1. MANUFACTURING PROCESS: BAR+LHF+VOD, FORGED OR HOT ROLLED.

ISO 9001



Reg.No.020095

CERT. No.0001

CERT00010001-1014201

Our quality and environment management systems have been certified by AS9100, ISO9001 QMS and 14001 EMS.
We hereby certify that the material described herein has been manufactured and tested with satisfactory results in accordance with the requirement of the above material specification.
We hereby the Inspection Certificate comply with EN 10204 3.1.

22-06-'07 07:38 FROM-metalex castle

514-695-3281

T-532 P003/006 F-232



GLORIA MATERIAL TECHNOLOGY CORP. INSPECTION CERTIFICATE

台南縣新營市新中路95號1樓
JIN NO.33, JIN CHUNG RD, JIN YING,
TAINAN, TAIWAN, R.O.C.
TEL: (06)6320000
FAX: (06)6320088

Messrs: ENERGY STEEL PRODUCTS INC.

Order No: 2006003980

Grade: 17-4 PH

FILE NO: 2006006726-A

Size: 4.5"

HEAT-Lot No: U1745-50

Weight: 4054.0KG 8937.53LB

P.O.NO.: 91853-000 OP

Date: 10/24/2006

P'cs: 12

Condition: HF-Solution Annealed-Pealed

2. MATERIAL IS FREE FROM MERCURY CONTAMINATION.

3. MACRO STRUCTURE OK.

4. MICRO STRUCTURE OK.

5. NO REPAIR BY WELDING.

6. ULTRASONIC TEST OK.

7. MECHANICAL PROPERTIES TESTED AS PER H900 CONDITION.

This report is a copy of original
mill certificate and verifies
that the product meets the
requirements as originally ordered
by Energy Steel Products.

DATE 11-22-06 REFILED BY



ISO 9001:2000



Reg. No.: 020093

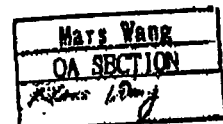


CERT. No. 92401

ISO 9001:2000+AS9100B



CERT-0070749-1034231



Our quality and environment management systems have been certified by AS9100, ISO9001 QMS and 14001 EMS.

CRUCIBLE SPECIALTY METALS
A Division of Crucible Materials Corporation

NEW YORK 13201

CERTIFICATE OF ANALYSIS

A M CASTLE, INC		SHIP TO T O	A M CASTLE, INC		OUR ORDER NO.
3400 N WOLF RD FRANKLIN PARK, IL 60131			3400 N WOLF RD FRANKLIN PARK, IL 60131		P-5-18863-6-1
					DATE 05/14/07

CUSTOMER ORDER # & DATE 01-25540	CUSTOMER REQ. #	DISTRICT B PARSONS	SHIPPED FROM SYRACUSE
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DESCRIPTION OF MATERIAL

SIZE

4 RD

CRU 17-4PH CG A IAC 14996

AMC-3174-03 REV 18 ASME-SA564-04ED T630 ASTM-A564-04 T630

AMS-56430 AMS-2303E AISI 430 UNS 4517400

HEAT NO.

CHEMICAL ANALYSIS

HEAT NO.	C	MN	P	S	SI	NI	CR	MO	CU	CB	TA
A18781	.050	.69	.026	.021	.42	4.14	15.53	.098	3.11	.27	.009

CASTLE METALS CORP.

DATE RCVD 5/24/07

IAC 14996

APPROVED BY *fw*

QUANTITY

HEAT NO.

MECHANICAL PROPERTIES

QUANTITY	HEAT NO.	TENSILE PSI	YLD. 2X PSI	%ELONG4D	RED/AREA2	HARDNESS BHN 343
8306 # A18781						

CAPABILITY PHYSICALS AFTER 900 DEG. F. - 1 HR. AIRCOOL:

200.870 180.530 11.4 51.8 BHN 401

MACRO TEST OK

FERRITE 3 %

MAGNAFLUX F/S = 0/0

REDUCTION RATIO: 16.3:1

MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 1 HOUR
AIRCOOLED.

CRUCIBLE MATERIALS CORP. VENDOR #18610.

MATERIAL INGOT CAST.

NAFTA - YES

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT
NO WELD REPAIR PERFORMED
MATERIAL MELTED IN U.S.A.THANK YOU FOR SELECTING A QUALITY PRODUCT
MANUFACTURED BY THE EMPLOYEES OF CRUCIBLE SPECIALTY METALSTHE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACCORDANCE
WITH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH THE
SPECIFICATION REQUIREMENTS.CRUCIBLE MATERIALS CORPORATION
ACTING BY AND THROUGH ITS SPECIALTY METALS DIVISION

SIGN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF _____, 20

NOTARY PUBLIC

CERTIFIED
BY

QUALITY ASSURANCE REPRESENTATIVE

CRUCIBLE MATERIALS CORPORATION



CERTIFICATE OF CONFORMITY

SOLD TO:

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, Ont.
K6A 1K7

SHIPPED TO:

same

QUANT TY

PART NUMBER

PART NAME

P.O. NUMBER

20 1' 10" OR

DSK078

Support detail D2893-1 B32779

4254

MATERIAL: supplied by DART

We hereby certify that the above parts were made in conformance with applicable drawings.

METEC Metal Technology Inc.


Denise Robinson

Vankleek Hill, August 3, 2007